8.1 THE ROLE OF A USER INTERFACE

Of all the components of a wearable system, the one most visible to the user is the user interface. More than any other system component, the user interface can set the tone for the user’s experience with the wearable system. To understand the importance of a user interface and the unique characteristics a user interface for a mainstream wearable system must possess, let’s first review its role.

The principle role of a user interface is to mediate the interaction between us and the wearable system. Recall the picture of how the user and the wearable system form a larger system and the various ways they can interact. Figure 8-1 shows the overview of this system, repeated from Chapter 3.

For a PC, the vast predominance of the interface, at least today, is the Graphical User Interface (GUI). This interface composed of windows, icons, menus, and a mouse, is the interface with which we are most familiar. This type of interface is also known as the WIMP interface for Windows Icons Menus and Pointers (the mouse).
For a wearable system, the scope of the user interface is much larger. Because the wearable system is mobile and personal, we can consider not only a GUI, but also speech, gesture, chording, and even eye tracking\(^{78}\). This scope expansion is driven by the need for our interface to adapt to the different situations and contexts in which we will find ourselves as we move about in our daily tasks. For instance, we may be sitting down at the table in the morning and can use the GUI, perhaps with a heads up display. Later in the day we will be walking outside where we would use a combination of speech and gesture. Still later, we will be in a meeting where we are limited to non-obvious actions such as chording.

The inclusion of these multiple types of interfaces adds complexity to the design of the system. Indeed, their inclusion is crucial if we are to allow the user easy operation of the wearable system in the many different environments the user will encounter.

\(^{78}\) Chording is the simultaneous pressing of multiple keys to specify an alphanumeric input. The use of chording allows compact input devices with fewer keys. An example is the Twiddler.